STATUS UPDATE
TO 16-17 AUG 06 WORKSHOP

4 DEC 06

From Albuquerque District New Commander Brief to Chief of Engineers (15 NOV)

Good News Story – MRG ESA Collaborative Program

WILLOW FLYCATCHER

SILVERY MINNOW

Background:

- 2003: USFWS Biological Opinion
- MRG ESA Collaborative Program: DOI/BOR & COE + 20 Signatories w/diverse interests & common goal
- Mission: Alleviate jeopardy while protecting water use & complying with laws, treaties & Indian trusts
- Situation: Species at population levels since listing; concern about BO requirements' sustainability

Workshop 16-17 AUG:

- Who: Signatories & stakeholders – BIA, NM Stream Commission, Pueblos, cities agribusiness, environmental, & staffers
- What: Managing over-allocated Rio Grande
  - Near term: Deal w/crisis if drought continues
  - Long term: Sustainable solutions; reinitiate consultation on the 2003 BO?
- Result: No easy answers but . . .
  - Screened two concepts & generated a hybrid
  - Enhanced commitment to collaborative approach's need to succeed & avoid court
  - Follow up w/participants on 4 DEC

Corps of Engineers

Environmental Operating Principles

Strive to Achieve Environmental Sustainability
Consider Environmental Consequences
Seek Balance and Synergy
Accept Responsibility
Mitigate Impacts
Understand the Environment
Respect Other Views

PURPOSE & KEY POINTS

- **Purpose:** To inform the Collaborative Group, & its Partners/Stakeholders about actions to date & the way ahead resulting from the 16-17 AUG workshop

- **Key Points:**
  1. Great workshop; no easy answers
  2. Concepts ≠ Tools (workshop provided advances to both)
  3. Moving forward towards a sustainable solution using elements of all concepts that emerged from the workshop.
  4. All ESA concepts focus on the management of supplemental (which is stored/released) water for the river.

Today's Agenda

- **Welcome, Review, Overview** — LTC Estok (USACE)
- **Modeling Assumptions/Approach** — Mark Yuska (USACE)
- **Modeling Results** — Leanne Towne (BOR)
  - 2003 Biological Opinion
  - Concept A "Add Critical Dry Year"
  - Concept B "Upstream Quality Reach"
- **Concept C "Adaptive Management"** — Connie Rupp (BOR)
- **Water Management Tools** — April Sanders (COE)
- **Closing Remarks** — Connie Rupp (BOR)

August Workshop Review

- **Driver:** Concern about ability to meet 2003 Biological Opinion (BO) in event of decreasing water to purchase and continued drought requires moving forward now
- **Purpose:** Engage diverse stakeholders to generate & discuss potential options for near & long term solutions for water operations & management in the MRG
- **Approach & Goals:**
  - Proactive & inclusive
  - Present & receive input on 2003 BO & Concepts A & B
  - Develop new/innovative Concept(s)
- **Collaborative Group Commitment at Conclusion**
  - No changes considered at Cochiti until Baseline Study complete
  - Develop resource informed way ahead
  - Confirm/deny viability of Concepts
  - Report back in NOV-DEC 06 timeframe
  - Get national Agency head visibility

Initial Water Management Concepts

- ***2003 Biological Opinion***
- ***Concept A***
  - 2003 Biological Opinion + Critically Dry Year
- ***Concept B***
  - Most years river managed to maintain continuous flows to San Acacia Diversion dam year round
  - In some years w/limited water, manage reaches south of Isleta Diversion Dam to maintain some flow in that reach

Concepts Simulated for Sustainable Solutions:

2003 BO Base Conditions

•58,000 ac-ft purchased water for ESA Compliance

•No spawning spikes released

BO Wet Year = continuous flow from Cochiti with a target flow of 150 cfs at San Acacia

BO Average Year = continuous flow from Cochiti with a target flow of 150 cfs at Isleta Dam and 100 cfs at San Acacia

BO Dry Year = continuous flow through July 15 from Cochiti with a target flow of 50 cfs at Isleta Dam and a resulting target flow of 10 cfs at San Acacia allowing for intermittent flow

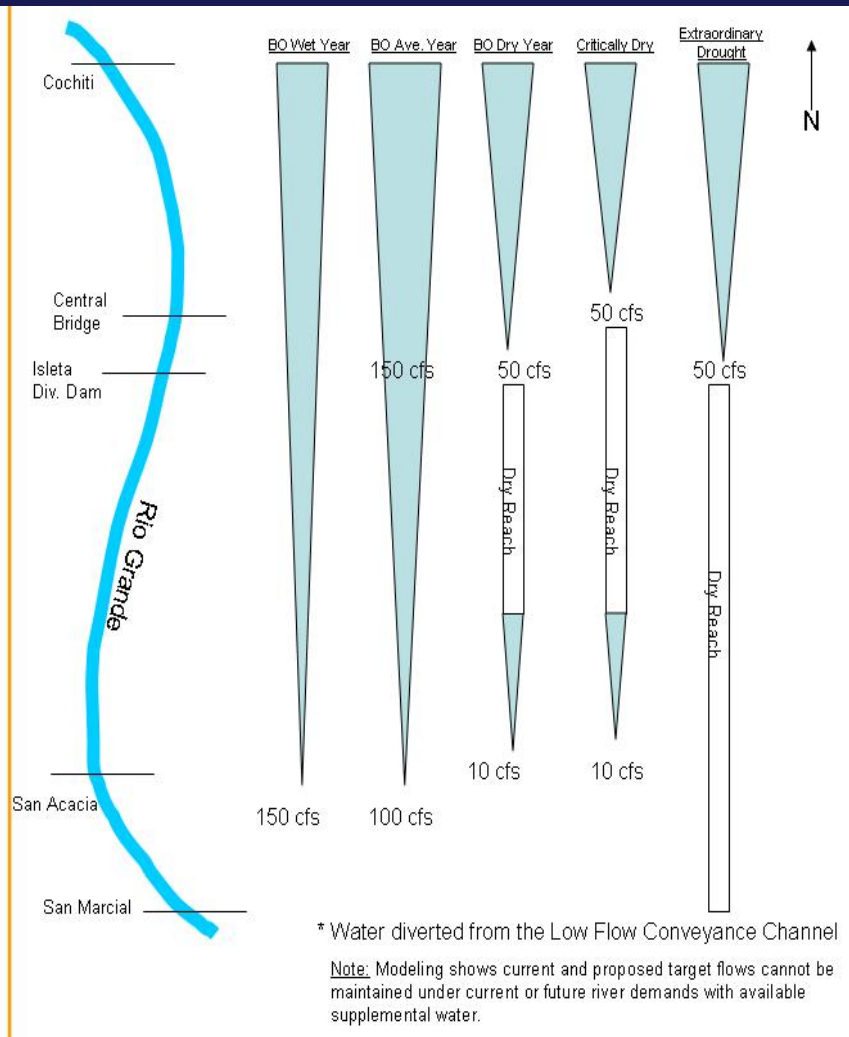
Concept A

Critically Dry Year (severe drought) =partial year flow from Cochiti with a target flow of 50 cfs at Central Bridge and a resulting target flow of 10 cfs at San Acacia allowing for intermittent flow

Concept B

Extraordinary Drought Year = continuous flow from Cochiti with a target flow of 50 cfs at Isleta Dam allowing for intermittent flow downstream

Concept C still undefined but would provide target flow flexibility based on adaptive management and current year hydrologic conditions



MODELING ASSUMPTIONS & APPROACH

Water Management Concepts vs. Tools

Concept		Tool
What We Want.	⟷	How We Get It.
What We Manage the River to look like.	⟷	How We Get the Water.
	⟷	

Model Used:

- Upper Rio Grande Water Operations Model (URGWOM) – updated version of the "Planning Model"
  - Rio Grande, and its reservoirs and features from Colorado/NM border to El Paso, TX
  - Developed in "RiverWare" software
  - Used extensively for URGWOPS-EIS and well suited to this one
  - Similar versions used for Annual Operating Plans, and various daily operations projections
  - Multi-agency developed, tested, and used
  - Same basic model used for all runs, except for varying hydrology

Scenarios

- Three Scenarios, each including three hydrologic-condition variations, were simulated:

    1. 2003 Biological Opinion (BO) – "base conditions"
    2. 2003 BO + Critically Dry year – aka: "Concept A"
    3. "Concept B" conditions

- Added runs for 2003 BO and Concept A showing amounts of supplemental water that would be used if available.**

** (Concept B can't be modeled this way at this time, since it triggers reduced MRGCD diversions based upon low available supply, which for this set of runs, never happens)

Assumptions and Initial Conditions

1. Initial reservoir storage levels were selected to approximately reflect 2007 starting conditions.

2. Existing storage authorities and policies are used for all reservoirs.

3. 50,000 af of supplemental water is available in the first year of each run, with 8,000 af available each subsequent year (assuming there's reservoir storage space in which to put it)

4. "Supplemental water" is all San Juan-Chama water leased from willing contractors.

5. The City of Albuquerque surface water diversion project is assumed to begin the third year of the simulation.

Assumptions and Initial Conditions

6. MRGCD has a 40% reduction in demand from 2000-2001 (as was done in 2003).

7. The target flows at Albuquerque, Isleta, San Acacia, and San Marcial were modeled as in the 2003 BO, based upon dry / average / wet hydrologic years, with critically dry years added on.

8. Critically dry years were defined as years when the March through July native flow at Otowi gage was less than 500,000 af.

9. Concept B was defined as follows: When MRGCD has available water, their diversions will be optimized to keep river wet to San Acacia and meet MRGCD demand.

10. URGWOPS 40-year hydrologic sequence was used to extract dry, average (trending to dry), and wet 10-year sequences.

Assumptions and Initial Conditions

11. Hydrology:

- 10-year sequences were selected and tagged “dry”, “average trending to dry”, and “wet” based upon their individual whole-year “Otowi Index” volumes
  - “Otowi Index Supply” is the total flow for the year past Otowi streamgage minus any native water reservoir storage/release effects, and minus San Juan-Chama water effects
- For reference, average total Otowi Index Supply for the last 30-years is a little less than 1-million af
- And, average March-July (spring-runoff) Otowi-Index (type) volume for the past 30-years is 757,000 af

Assumptions and Initial Conditions

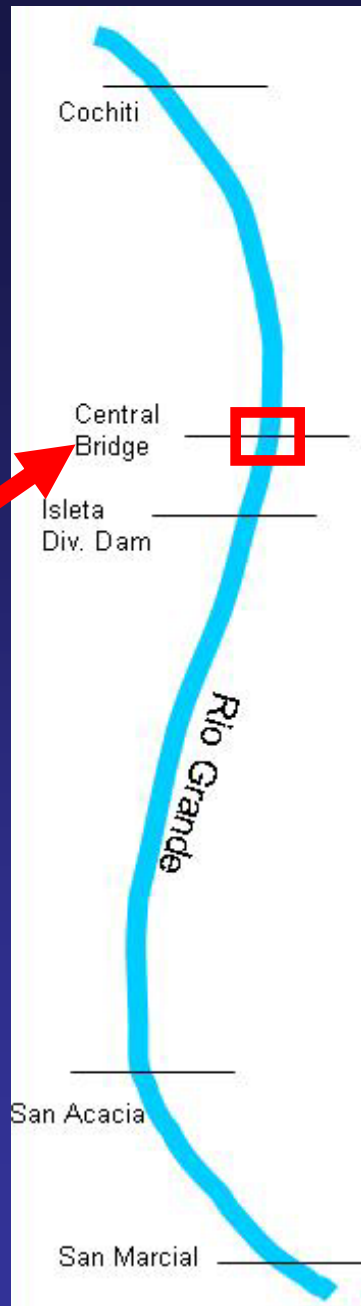
11. Hydrology (cont):

	Dry Sequence			Average Trending to Dry Sequence			Wet Sequence		
		Total	M-J		Total	M-J		Total	M-J
1	1976	682,500	478,400	1982	1,183,500	779,000	1999	1,103,200	650,300
2	1989	713,400	482,500	1988	726,500	415,700	1986	1,805,900	1,257,500
3	1996	449,100	221,700	1992	1,067,800	799,400	1999	1,103,200	650,300
4	1977	296,500	133,100	1976	682,500	478,400	1991	1,239,000	862,300
5	1989	713,400	482,500	1989	713,400	482,500	1980	1,392,200	1,159,800
6	1989	713,400	482,500	1996	449,100	221,700	1992	1,067,800	799,400
7	1981	416,900	187,800	1977	296,500	133,100	1985	2,169,100	1,744,000
8	1996	449,100	221,700	1989	713,400	482,500	1998	892,500	578,700
9	1996	449,100	221,700	1989	713,400	482,500	1978	699,000	507,800
10	1977	296,500	133,100	1981	416,900	187,800	1998	892,500	578,700

(Average Year Total ~ 1-million af)

Target Flows

The 2003 BO target flows were simulated according to the type of the hydrologic year (dry, average, wet, and Article VI/VII of the Rio Grande Compact). The target flows associated with critically dry year were added to the table.



Albuquerque Gage Flow Targets (cfs)

Starting Date	Critically Dry	Dry	Average	Wet
1-Jan	100	100	100	100
15-Jun	50	100	100	100
30-Jun	50	100	100	100
15-Jul	50	100	100	100
15-Nov	100	100	100	100

2003 BO target flows

Target Flows

Below Isleta Diversions Dam Flow Targets (cfs)

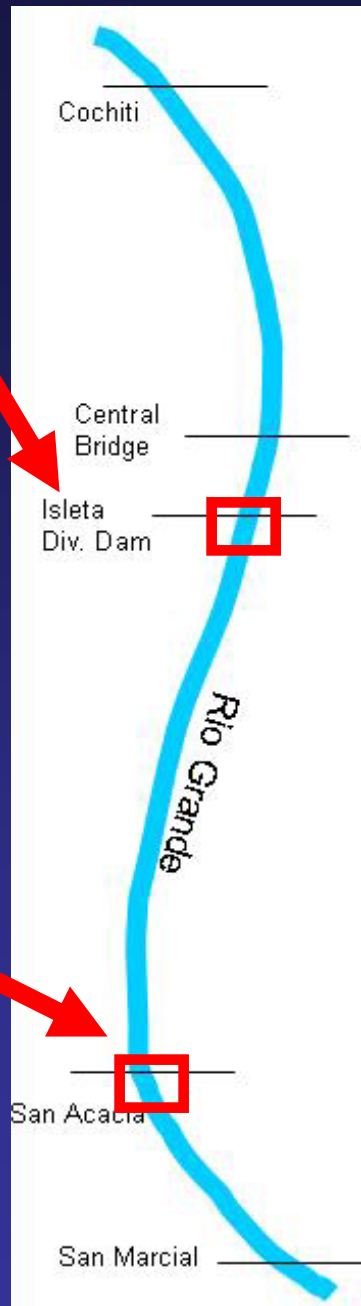
Starting Date	Critically Dry	Dry	Average	Wet
1-Jan	100	100	100	150
15-Jun	20	50	100	150
30-Jun	0	0	100	150
15-Jul	0	0	100	150
15-Nov	100	100	100	150

2003 BO target flows

Below San Acacia Diversion Dam Flow Targets (cfs)

Starting Date	Critically Dry	Dry	Average	Wet
1-Jan	10	175	175	175
15-Jun	0	100	100	100
30-Jun	0	0	50	100
15-Jul	0	0	50	100
15-Nov	10	175	175	175

2003 BO target flows

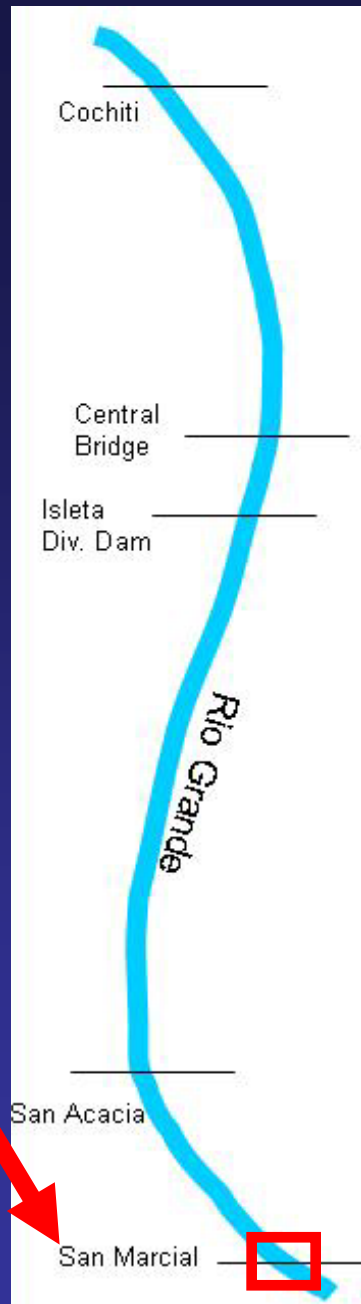


Target Flows

San Marcial Flow Targets (cfs)

Starting Date	Critically Dry	Dry	Average	Wet
1-Jan	0	10	10	100
15-Jun	0	0	0	50
30-Jun	0	0	0	0
15-Jul	0	0	0	0
15-Nov	0	10	10	100

2003 BO target flows



"Food For Thought"

- It's not really a matter of finding additional water supplies exclusively for the river.
- It's more about; at what times and where does water used for many purposes need to be in the river.